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the brush and rocks of the steep hillside. They were still unable to fly more than a short distance, but were safe from further handling on account of their large, sharp claws, and their ability to fly and scramble over the rough surface faster than one could easily follow.

This pair of birds did considerable flying about and hunting on cloudy days. Their hearing was extremely good and their sight in the daytime was much better than I expected. An accurate account of food found in the nest at the time of the various visits gives us the following: parts of two brush rabbits, three wood rats, and five pocket rats. On only one occasion was there any indication of these owls feeding upon other birds, that being a small bunch of quail feathers at the base of the cliff, and I am sure that birds form but a very small percentage of their food. Otherwise we would undoubtedly have found some evidence in the line of feathers in or around the nest.

From all my observations of this pair of birds, extending over a long series of years, I would say that they were far more a benefit to the farmer and orchardist than a menace, in spite of the unfavorable reputation this species generally bears.

Escondido, California, December 26, 1913.

DESTRUCTION OF BIRDS IN CALIFORNIA BY FUMIGATION OF TREES

By A. BRAZIER HOWELL

FEW people realize, I imagine, to what a great extent certain passerine birds are destroyed by the fumigation of citrus trees in California. Probably more birds of this group are killed each year in the state by this, than by any other agency of human operation. From time to time articles have appeared registering a protest against the use of poisons in sprays because a few birds have been killed by eating the fruit or insects with which the poison has come in contact, but no one seems to have pointed in print to the destruction caused by fumigation practice.

For those not familiar with the sight, it is necessary to explain that in order to kill the black scale, the greatest and most widespread citrus pest that we have, the trees are treated with hydrocyanic acid gas. As a covering to confine the gas the sheet tent is the type most often used. To one end of a long light pole is permanently tied a rope, and here is affixed a corner of the tent. Two men working in unison and each with such a pole, brace the free end with their feet and pulling hard on the rope, hoist the tent sailing over the tree in but a few seconds, hardly touching it during the process. Beneath the tent is then placed a jug containing a mixture of water, sulphuric acid and potassium cyanide, and by this is generated the deadly gas. The whole outfit is allowed to remain in position for forty or fifty minutes. This is done only between sunset and sunrise because if attempted in the daytime, certain burning of the fruit and foliage would result. Fumigation is carried on from August until January. As the tree is not disturbed in any way until the tent falls in place, any bird roosting therein is sure to be killed.

The exact location of a grove has much to do with the numbers of birds

that habitually resort to it at night, for one that is surrounded by other groves or plowed ground would not prove as attractive as one that is bordered by patches of weeds or brush. Also the bird mortality on a certain tract would vary greatly according to the time of the year when fumigation is undertaken. If during August, no dead Dwarf Hermit Thrushes, Gambel Sparrows nor Audubon Warblers would be found. Later in the season flocks of House Finches seem to frequent the groves more during the night, than in the early fall.

Conditions were observed only in my own and nearby groves, so my generalities applying to supposedly similar conditions farther afield must not be taken for absolute proof. In this case, however, what holds good in one district must apply to a greater or less extent to all the citrus centers of the state.

At my orange grove in Covina, fumigating was begun November 25, 1911, and most of the trees were treated, taking, in all, four nights. During the first night two hundred large trees were finished, and the next morning I counted under them the following dead birds:

- 37 House Finches (*Carpodacus mexicanus frontalis*)
- 24 Goldfinches (*Astragalinus tristis salicamans* and *A. psaltria hesperophilus*)
- 11 Audubon Warblers (*Dendroica auduboni auduboni*)
- 7 Gambel Sparrows (*Zonotrichia leucophrys gambeli*)
- 4 San Diego Song Sparrows (*Melospiza melodia cooperi*)
- 4 Western Chipping Sparrows (*Spizella passerina arizonae*)
- 3 Hermit Thrushes (*Hylocichla guttata nanus*)
- 1 Western Mourning Dove (*Zenaidura macroura marginella*)
- 1 Anthony Towhee (*Pipilo crissalis senicula*)

This was the only time that I made a careful and accurate count (though I may have missed several), but there seemed to be slightly more birds than on any other day that observations were made. Also my grove would probably give a greater count than the average, as on two sides it adjoins weedy land which proves a rather attractive feeding ground to the birds. Subsequent to the above date I have found, besides the forms already enumerated, a few Western Mockingbirds (*Mimus polyglottos leucopterus*), California Thrashers (*Toxostoma redivivum redivivum*), a Dusky Warbler (*Vermivora celata sordida*), and a partly decomposed hummingbird of some kind. Groves in other districts, as in the foothills or along the rivers, must have additional species roosting in them. A citrus tree and especially the orange, having rather dense foliage, presents a snug retreat, and it seems safe to say that practically all species would be found in them that habitually roost in the low trees of the districts in which the groves occur. From my own experience I am led to believe that Valley Quail (*Lophortyx californica vallicola*), although they commonly pass the night in the groves, do not suffer to any extent by fumigation, for they take alarm very easily and are driven out of the trees at any hour by any suspicious activity near-by.

Under two hundred trees I found ninety-two dead birds and there are 200,000 acres of bearing citrus groves in the state, planted with over eighty trees to the acre. These 1,600,000 trees are fumigated on an average every two years, which would give a total of 360,000 dead birds each year. As noted above, I believe this estimate to be slightly in excess of the real number, but even if we take but a third of this amount we must consider that it takes place on an aggregate of one hundred and fifty-three square miles. This is a large mortality for so small an area every two years, or only half the area *each* year.

Is there a remedy? The laborers employed by the fumigating companies are notoriously careless of the property on which they are working and I judge that very few of them would lift a hand in order to save the life of a bird. It

would be a decided help if we could have a law that would impose a slight fine on the fumigator for every bird so killed,—merely a nominal sum, say five cents a bird. This would be sufficient to make the workmen swing a lantern in among the foliage and shake the tree gently in order to scare out the feathered lodgers. In order to obtain results, it would of course be necessary for a warden to make occasional and unexpected visits to the orange groves during the fall of the year.

Covina, California, January 17, 1914.

AN ASIONINE RUSE

By WILLIAM LEON DAWSON

IN her excellent article, "With Asio in the Greenwood", in a recent number of *Bird-Lore*, Florence Merriam Bailey describes the behavior of a Long-eared Owl which she had been watching closely for some time in the vicinity of its nest. The old Owl stood guard so quietly one afternoon that she seemed on the point of going to sleep. "The next moment", Mrs. Bailey records, "to my great astonishment, she darted to the ground as swiftly as a Kingfisher dives for a fish he has been carefully locating from above. A shriek—and then a silence! Up she flew surrounded by a noisy mob of Bronzed Grackles, three Orioles and a Blue Jay. When the excitement had subsided a little the Blue Jay flew off with a sad reflective cry", due to the proximity of her own brood. "And yet", concludes Mrs. Bailey, "the victim was probably a wood mouse, or some such small vermin".

This episode reminds the writer of an experience enjoyed by him while in camp on the banks of the Walla Walla River in Washington—May 3rd, 1907, it was—and a recital of the circumstances may possibly, although not certainly, throw some light on the identity of Mrs. Bailey's "mouse". I was seated at a height of twelve or fifteen feet from the ground in a willow tree beside a nest of young Long-eared Owls,—one of a line of four nests which I had been watching for several days. The youngsters were "freezing" faithfully, as usual, all except the runt, which still favored the cowering pose. The male parent had delivered himself of a series of quaint execrations, "*Morach moraaaouw, werck werck wraaaow; wreck wraaa*", and had quitted the scene in disgust.

The female had caterwauled and cajoled and exploded and entreated by turns, all in vain. Matters seemed to have reached an *impasse*, and silence had fallen over the landscape. I had time to note the sage-pinks bright with morning dew, and the subtle, soothing gray-greens of the sage itself, as it rose in billows over the slopes of the closely-investing hills. All of a sudden the Owl left her perch, flew to some distance, and pounced upon the ground, where she could not well be seen through the intervening foliage. Upon the instant of the pounce arose the piercing cries of a creature in distress, and I, supposing that the bird, in anger, had fallen upon a harmless Flicker, which I knew dwelt in that neck of the woods, scrambled down instanter and hurried forward. The prompt binoculars revealed neither Flicker nor mouse. There was nothing whatever in the Owl's talons. The victor and the victim were one and the same, and I was the dupe. Yet so completely was the *play* carried out that the bird fluttered her wings and trod vigorously with a rocking motion, as though sinking her talons deeply into a victim. I was astonished. Nor should I believe the evidence of my eyes to this day if I had not witnessed the same play repeatedly thereafter. The Owl